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The Generic Status of *Scincus lateralis* Say, 1823

By M. B. MITTLEMAN

The great array of lizards assigned to the supergenus *Lygosoma* exhibits a bewildering variety and combination of traits. Many authors have in despair lumped all of the species into a single catch-all genus *(Lygosoma),* as for instance Boulenger (1887, Cat. Liz. Brit. Mus., ed. 2), while others have perhaps inclined just as extremely, but in the opposite direction, by an undue multiplication of genera, as notably Gray (1845, Cat. Liz. Brit. Mus., ed. 1).

A recent attempt by Malcolm A. Smith (1937, Rec. Ind. Mus., 39, 3: 213-234) to reduce the unwieldly *Lygosoma* (sensu lato) through the redefinition of certain genera and subgenera has helped partly to clarify the taxonomy of these scincid lizards. However, a number of species groups, several of which are surely of distinguishable generic rank, have been placed by Smith in a single genus, *Leiolopisma.* As pointed out by Hobart Smith (1946, Handbook Liz., p. 335), this arrangement does not permit the recognition of many distinct phylogenetic assemblages in *Leiolopisma* (sensu lato), and therefore does not help to clarify the systematic position of the forms involved.

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More specifically with reference to the American species, and certain related lizards of Papuasia and the Indo-Chinese region, Malcolm Smith's arrangement requires that they share a common genus with some forms from which they are as far removed comparatively as, for instance, *Neoseps* is from *Eumeces.* Furthermore, Smith's arrangement places the United States species, *laterale,* in one subgenus (or genus if the group is elevated to that rank), *Leiolopisma,* while such closely related forms as *assatum, cherriei,* and others of Mexico and Central America from which *laterale* has clearly arisen, would fall within the subgenus or genus *Lampropholis* (sensu M. A. Smith).

Within the supergenus *Lygosoma* the American species and their close relatives in Papuasia and the Indo-Chinese region are part of a major section which includes lizards characterized by a palpebral disc, no supranasal scales, an exposed tympanum, large prefrontals, and well-developed pentadactyl limbs. A number of generic names have been applied from time to time to the American and related species of lizards, but none of these names applies properly to the species involved. *Leiolopisma* Duméril and Bibron, 1839 (Erp. Gen., 5: 742), genotype *L. telfairii,* Mauritia, is prominently disassociated by reason of lacking enlarged preanals; in the American and Sino-Indo-Papuasian species the preanals are always prominently enlarged, and the fixity of this character (or lack

thereof) in a great array of species confirms its usefulness as a generic criterion. *Lampropholis* Fitzinger, 1843 (Syst. Rept., p. 22), genotype *Lygosoma guichenoti* Duméril and Bibron, Australia, is likewise inapplicable for it also has no enlarged preanals, although it should be used generically for another well-defined group in the supergenus *Lygosoma.* The genus *Mocoa* Gray, 1845 (p. 80) is a straight synonym of *Lampropholis* (s.s.), as are also *Eulepis* Fitzinger, 1843 (*loc. cit.*), *Lioscincus* Bocage, 1873 (Jour. Acad. Sci. Lisbon, 4: 228), and *Sauroscincus* Peters, 1879 (Sitz. Ges. Nat. Fr. Berlin, p. 149). The generic names proposed by Girard: *Oligosoma, Cyclodina, Lygosomella,* and *Hombronia* (1857, Proc. Acad. Nat. Sci. Phila. : 195-196) are all synonyms of *Leiolopisma* (s.s.). The genus *Lygosoma* of Hardwicke and Gray, 1827 (Zool. Jour., 3: 228), which has been often used for the American and the Sino-Indo-Papuasian species is completely inapplicable, for it is founded on a species (*serpens,* = *quadrupes*) which is very distinct by reason of having a scaly lower eyelid completely lacking the palpebral disc. In a similar fashion, all of the other generic names proposed, as listed by Boulenger (1887: 209-210) and M. A. Smith (1937: 223) are applicable either to other generic groups of the supergenus *Lygosoma,* or else are straight synonyms or homonyms of earlier genera.

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The most nearly applicable name for the American species and their close relatives is *Lipinia* Gray, 1845, genotype *Lipinia pulchella* Gray, Philippine Islands. The *Lipinia* species show their affinity with the American and Sino-Indo-Papuasian species in question by virtue of having enlarged preanals and in possessing the other characters enumerated heretofore as generally diagnostic of these species. Yet, it is difficult to associate forms such as *laterale, assatum, reevesi, himalayana, etc.,* with *Lipinia,* for *Lipinia* differs in several important respects. In *Lipinia* the snout is elongated, acute, and concave; the frontonasal is at least as long as, or longer than, it is broad; the rostral is deeper (longer) than it is wide; the prefrontals are deep, and form a median suture which is equal to more than half their depth; the supraoculars are in some species 5 or 6. The American and Sino-Indo-Papuasian forms always have four principal supraoculars; their snouts are short, obtuse, flat or convex; the frontonasal is normally distinctly broader than long; the rostral is also broader than it is deep; the prefrontals are either separated completely or else form a comparatively short suture equal in length to less than half their depth.

Although, in view of the multiplicity of generic names already proposed and applicable to various groups within the supergenus *Lygosoma,* it may appear rash to propose still another genus for one of these scincid groups, there seems to be no alternative in the present instance. The American and Indo-Sino-Papuasian species form a compact, closely similar group, which are individually more nearly related to each other than they are to any other species or group(s) of species in the supergenus *Lygosoma.* Moreover, they all apparently share a common phyletic origin, which would of necessity be ignored were they to be placed in other, pre-existing genera such as *Lipinia, Lampropholis, Leiolopisma,* or *Lygosoma.* Accordingly, I propose that the American species and their relatives in India, the Sino-Japanese region, and Papuasia be allocated to a separate genus, to be called

SCINCELLA, n. gen.

Genotype.—*Scincus lateralis* Say, 1823 (*in* Edwin James: Account of an expedition from Pittsburgh to the Rocky Mountains, etc., Phila., 2: 324).

Diagnosis.—Small scincid lizards. Palatine bones in contact mesially; pterygoid bones in contact anteriorly, the palatal notch not extending forward to between the centers of the eyes; pterygoid teeth minute or absent; maxillary teeth conical; eyelids well developed, the lower one with an undivided transparent (sometimes semi-opaque) disc. Nostril in the nasal; no supranasals; prefrontals, frontoparietals, interparietal distinct; tympanum exposed; four principal supraoculars; two loreals; supra- and infra-labials 6 or 7; frontonasal broader than long; rostral wider than deep; prefrontals not meeting, or else forming a short suture equal to less than half their depth; a pair of enlarged preanals. Snout short, obtuse, flat, or convex. Limbs pentadactyl, moderately developed. (In part from Smith, 1935, Rept. and Amph. of Brit. India, 2: 293, 295).

Included Species.—All North and Central American species of the supergenus *Lygosoma;* all Indian, Indo-Chinese, Burman, and Malayan species listed by Malcolm Smith (1935) under *Leiolopisma* except *L. formosum* which belongs to *Leiolopisma* (s.s.); all Chinese and Sino-Japanese species listed by Schmidt (1927, Bull. Amer. Mus. Nat. Hist., 54, 4); the following Pacific species listed by DeRooij (1915, Indo-Australian Rept.): *elegans, semoni, textum, inconspicuum, nitens, miotis, pulchrum, subnitens, stanleyanum*; possibly also *Lygosoma semperi* Peters and *Lipinia vulcanium* Girard, both of the Philippines.

The inherent differences between *Scincella* and certain other closely related lygosome genera which are characterized by a palpebral disc, exposed tympanum, no supranasals, and pentadactyl limbs may be seen in the following synopsis:

A. One or two pairs of prominently enlarged preanal scales.

1. Supraoculars 4 to 6; supralabials 7 or 8; snout elongated, acute, depressed or concave; frontonasal at least as long as wide; rostral deeper than wide; prefrontals forming a median suture longer than half their depth; limbs long. *LIPINIA*

2. Supraoculars 4; supralabials normally 6 or 7; snout short, obtuse, flat or convex; frontonasal wider than long; rostral wider than long; prefrontals not meeting, or else forming a suture less than half as long as their depth; limbs moderate. *SCINCELLA*

B. No enlarged preanal scales.

1. Frontoparietal single. *LAMPROPHOLIS*

2. Frontoparietal paired. *LEIOLOPISMA*

It may well be argued, and with good reason, that the foregoing arrangement suffers from lack of consistency, regardless of any other virtues it may have, in that *Leiolopisma* and *Lampropholis* are separated on the basis of paired or fused frontoparietals, while *Scincella* is considered homogeneous even though it contains species having both types of frontoparietals. The prime reason for not separating the fused-

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frontoparietal species from the paired-frontoparietal forms is that in *Scincella* this character is apparently trivial. For example, in *Scincella travankorica* the frontoparietal may be single or partially divided, while in the closely related *Scincella palnica* the frontoparietal is always single, but in the equally closely related *Scincella beddomei* the frontoparietal is always paired. Further, were the fused or paired state of the frontoparietal to be considered generically significant in this instance, certain closely related forms of the United States and Mexico would have to be placed in a genus apart from other near relatives also in Mexico, and in Central America. Thus, species of the United States and Mexico such as *Scincella laterale, Scincella silvicolum, Sincella gemmingeri,* and *Scincella forbesorum* all with paired frontoparietals, would have to be considered generically distinct from other Mexican and Central American species with a single frontoparietal, such as *Scincella assata assata, Scincella a. taylori, Scincella incertum, Scincella cherriei cherriei, Scincella c. ixbaac,* and *Scincella c. stuarti.* The former group of species seems to be derived from the latter group, and is in every respect very close. Moreover, the fused as compared to the paired state of the frontoparietals is not rigid in these species; in at least one form (*S. c. cherriei*) which normally has fused frontoparietals an occasional specimen turns up with paired frontoparietals (H. M. Smith, *in litt.*). All evidence points to the generic identity of the American species, and they are accordingly placed congenerically in *Scincella.* Conversely, in *Leiolopisma* with a great many species, paired frontoparietals are consistently found, whereas in *Lampropholis* with an equal diversity of forms the fused frontoparietal occurs with equivalent constancy. For those who do not hold with the separation of *Leiolopisma* and *Lampropholis,* and consider these groups generically identical, the name *Leiolopisma* must be used.

LARCHMONT, NEW YORK

Miscellaneous Notes on Some Amphibians and Reptiles from the Southeastern United States

By M. B. MITTLEMAN

During the first three weeks of May, 1948, a leisurely motor trip from New York City to Key West, Florida, provided the opportunity to collect various amphibians and reptiles. The appended notes record some observations which appear worthy of publication.

Hyla septentrionalis septentrionalis Boulenger—The maximum dimensions attained by this large tree-frog have been the subject of considerable discussion. Carr (1940: 62) mentions that males in breeding condition examined by him varied from 40 to 73 mm. Wright and Wright (1949: 338) present many measurements of both sexes, and conclude that males vary from 46 to 75 mm., while females range from 52.5 to 130 mm. (although the largest female apparently examined by the Wrights measured only 92 mm.). I collected a series of 30 specimens from a breeding congress in the flooded basement of a deserted cigar factory on Key West, on May 6. Three specimens were donated to various institutions; of 12 females, the snout-vent length varies from 65.5 mm. to 86.5 mm., and averages 73.1 mm. (all specimens gravid). In 14 preserved males the snout-vent length ranges from 37.5 mm. to 88.5 mm., and averages 59.5 mm.; all specimens, including the 37.5 mm. individual, bore the callosities

on the base of the thumb which are characteristic of the breeding males of this frog. Another male taken at the same time has been skeletonized; so far as I can determine, this specimen is the largest *septentrionalis* known. From the anterior edges of the premaxillae to the posterior extremity of the ischium the straightline measurement is 112 mm.; the total length with the legs outstretched is 279 mm. The first sign of ossification of the cranial derm in my series occurs in a male 45 mm. long.

Microhyla carolinensis carolinensis (Holbrook).—Examination of the rather exhaustive literature treating wholly or in part with this "toad" fails to reveal any reference to secondary sexual ornamentation. Two male specimens, measuring 22 and 24 mm. snout-vent, respectively, taken at Paine's Prairie, near Gainesville, Florida, on May 2, are extremely interesting in that they possess small elongate tubercles on the chin and anterior edge of the lower jaw. That these specimens are breeding males is borne out by their enlarged testes. Female specimens taken at the same time are gravid.

Thanks to the kind help of Mr. Wilfred T. Neill, it appears likely that the tubercles are regularly present only in breeding males. At my request Mr. Neill examined 44 specimens of both sexes of *M. c. carolinensis* in his personal collection, from various Coastal Plain and Piedmont localities in South Carolina, Georgia, and Florida; and arrived at the following conclusions: (1) tubercles or papillae are lacking in all juvenile specimens of 16.5 mm. snout-vent length or less; (2) tubercles or papillae are lacking in all females; (3) tubercles and/or papillae are present in nearly all breeding males of 22+ mm., snout-vent length. Out of 20 breeding males, Mr. Neill advises me that only two specimens lack the tubercles. One of these individuals has the tip of the lower jaw swollen, but shows no signs of the tubercles (Black Swamp, Jasper Co., South Carolina). The other specimen (Midville, Burke Co., Georgia) also lacks the tubercles and has only a number of white dots on the lower jaw where the tubercles are usually present; concerning this specimen Mr. Neill advises that it is from a population which is aberrant in several respects.

The tubercles are present very often on the throat as well as the lower jaw, and may be scattered completely around the throat and lower jaw from the tip to the rictus of the mouth, or else restricted to the tip of the chin. The degree of development varies, requiring low magnification in some cases, and being clearly visible, especially in profile, in others. The tubercles probably wax and wane according to the sexual activity of the animal, inasmuch as non-breeding males taken early in the year lack these ornaments, while post-nuptial specimens taken as late as November 22 still show a few scattered tubercles.

In addition to *M. c. carolinensis,* the tubercles occur also in *M. c. olivacea,* according to Dr. Hobart M. Smith, who examined several specimens of this latter form at my request. Whether or not the tubercles occur in the related *mazatlanensis,* or the nominal form *areolata* is not known. In the 26 forms of the genus *Microhyla* discussed by Parker (1934), sexual ornamentation was found by this author only in *Microhyla usta,* as small spinules on the edge of the lower jaw. It is not certain from Parker's remarks whether these spinules are restricted to breeding specimens, or whether they occur in *M. u. usta* or *M. u. gadovii.*

Sphaerodactylus cinereus Wagler.—This gecko was found to be extremely common at Key West, and was observed to be strictly edificarian in prominent contradistinction to *S. notatus* which is terrestrial. Out of

14 specimens preserved, individuals up to 18 mm. snout-vent length have prominent red transverse bands on the body and tail, but other specimens of 27-29 mm. snout-vent length are fairly uniform in a brown or reddish-brown dress, with no semblance of the bright red tails of the juveniles. Carr (1940: 71) has remarked that he has never seen a specimen intermediate between the banded and unicolor phases, and my experience has been the same. However, Grant has recently (1948: fig. 2, 71) demonstrated the gradual transition from the banded to the unicolor stage.

Two eggs of this lizard were found on May 6, at Key West, in a rotten cypress plank. The dimensions were 5.75 x 8.75 mm., and 5.50 x 8.25 mm.; the shell is hard and brittle, and as suggested by Smith (1946: 75) they are "more like tiny bird eggs than the usual leathery reptile-egg coverings." One egg proved to be sterile; the other was opened on May 22, and revealed an embryo very nearly ready to hatch. The total length of this specimen is 22 mm., snout-vent length 13 mm. When first observed, it was prominently banded with bright coral-red on the body and the base of the tail, while the distal half of the tail was pink.

Sphaerodactylus notatus Baird.—Numerous specimens were observed, and several collected, under logs and driftwood on West Summerland Key and Key West. All but two specimens were taken in terrestrial situations, the exceptions being found under an old newspaper in a deserted shack in Key West. One of the Key West specimens, a female measuring 27.5 mm. snout-vent, contains a single egg 3 x 5.5 mm.

Hemidactylus turcicus turcicus (Linnaeus).—A single male specimen (81 mm. total length, 51 mm. snout-vent length) was taken at Key West, and a number of others were seen but eluded capture. The captured individual, as with most of the others, was observed at night, hanging head down on a window screen, catching small moths and other night-flying insects attracted by a nearby electric light bulb.

Three eggs of this gecko were found together (May 6) with two eggs of *Sphaerodactylus cinereus* in a rotten cypress plank, in Key West. The *Hemidactylus* eggs measure 9.75 x 12.75 mm., 9.75 x 11.75 mm., and 9.75 x 11.75 mm. As in *Sphaerodactylus*, the shells are thin and extremely brittle. The eggs were kept until July 10, at which time they were opened and found to contain small embryos (7-10 mm. snout-vent) showing no pattern.

Malaclemys terrapin rhizophorarum Fowler.—A single large, adult male of this recently-revived subspecies of terrapin was obtained (May 9) from a fisherman, who had caught the specimen on a hook baited with live shrimp, in a roadside ditch bordering Florida Rt. 205, about 12 miles west of Royal Palm Hammock. The carapace straight-line length is 186 mm., while its greatest width (at the level of the eighth marginal) is 132 mm. The greatest height, from the tip of the highest boss to the plastron, is 76 mm. A low keel is present on the first vertebral, while prominent bosses occur on the second, third, and fourth vertebrals. The anterior edges of the lower marginals which partly comprise the bridge are prominently demarcated with dark brown, as are also a few of the plastral scutes. Close agreement between this specimen and Carr's notes (1946: 171) is apparent, except for the fact that all of the marginal and costal scutes possess distinctly light centers. So far as color is concerned, this specimen is very similar to Hay's plate of *Malaclemys t. macrospilota* (1905: pl. 11, fig. 1), except that Hay's specimen lacks the dark edges on the lower marginals. The anterior part of the head of my specimen is

almost white and is virtually immaculate, while the posterior part of the head, and the neck, is blue gray speckled with a darker bluish-black. The edges of the mandibles and maxillae are immaculate white. This particular specimen appears to be very close to *macrospilota,* as described and illustrated by Hay (1905, *loc. cit.*), differing only in having dark edges to its lower marginals.

Caretta caretta caretta (Linnaeus).—Pope (1939: 278), citing True, mentions a skull of this species with a length of 11 inches, and a breadth of eight inches. Skulls of this size are doubtless very rare, but Pope (*loc. cit.*) mentions that another skull of these dimensions was found recently on one of the Florida Keys. I now record a third skull with almost exactly the same measurements: straight-line length 281 mm., greatest breadth 193 mm. The skull was given to me by Mr. Wilford Piper, who obtained it at Bonita Beach, about three miles west of Bonita Springs, Lee County, Florida.

Interestingly enough, although Deraniyagala considers *C. c. gigas* to be the largest species of the family Carettidae (1939: 183), he lists no skulls of this form with a length greater than 225 mm. The impressive dimensions of a Caretta skull 281 mm. long are best appreciated when it is realized that the largest skulls recorded for *Dermochelys coriacea* (the largest living testudinate) by Deraniyagala (1939: 100) are 290 to 300 mm., which occur in specimens of 1520 to 1650 mm. curved carapace length. Measurements by Deraniyagala on *C. c. gigas* show that the head length varies from 22.9% to 28.8% of the curved carapace length, while straight-line carapace length is about 95% of the curved length. On this basis, with a skull measuring 281 mm., and assuming that it was only 23% of the curved carapace length, the specimen from which my skull came must have had a curved carapace length of 1,220 mm., or a straight-line length of 1,160 mm. (=approximately 46.5 inches). DeRooij (1915: 311) reports a length of 1,050 mm. in *Caretta caretta* (subsp. indet.), and Babcock (1919: 346) says merely that specimens with a carapace length of up to four feet "have been reported." A maximum length of about 36 inches seems to be the extreme limit in *C. c. caretta,* so far as reliable records go.

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Status of the Name *Hyla septentrionalis*

By M. B. MITTLEMAN

Concerning the name of the giant West Indian tree frog known as *Hyla septentrionalis*, Stejneger says (1905: 330) "This name must be dated from Boulenger, as both Schlegel's *Hyla septentrionalis*, of 1837, and Tschudi's *Dendrohyas septentrionalis* of 1838, are absolute *nomina nuda*." Actually, however, as will be shown, Schlegel's *Hyla septentrionalis* is not a *nomen nudem*, and its validity precludes the application of *Hyla septentrionalis* Boulenger, 1882, to the West Indian (and Floridian) species.

The history of the name *Hyla septentrionalis* is somewhat involved, and characterized by a certain casualness often met with in the classical period of herpetological taxonomy. Some time prior to 1837, incidental to the preparation of his *Classification der Batrachier* (1838), J. J. Tschudi visited the Paris Museum for the purpose of examining the collections in this institution. During his visit, Tschudi designated three large species of Hylas by the names *Hyla geographica*, *Hyla septentrionalis*, and *Hyla dominicensis* (*fide* Duméril and Bibron, 1841: 535-536). Tschudi's designations are best considered as manuscript names, probably written on labels, preparatory to formal publication in his *Classification der Batrachier*. Tschudi's use of the name *septentrionalis* was in allusion to the alleged origin of the Paris Museum's specimens

from the North Cape of Norway. It may be added parenthetically that in 1841 Duméril and Bibron (p. 540) were quite skeptical of the northern provenance of the *septentrionalis* specimens, since a re-examination of them, and comparison with Cuban examples, showed their conspecificity.

Shortly after Tschudi's visit to the Paris Museum, Schlegel learned of his (Tschudi's) discrimination of the species *Hyla septentrionalis*. Either as a result of a personal visit to Paris, or from notes supplied by Duméril, Schlegel somehow became convinced that the Paris Museum's *Hyla septentrionalis* were identical with his new Javanese *Hyla chalconota*. Even more remarkably, Schlegel did not dispute the supposed Norwegian origin of the *septentrionalis* specimens, and instead commented at length (1837: 24) on the astonishing distribution that encompassed both the North Cape and the island of Java! Thus, in his discussion of *Hyla chalconota* (*loc. cit.*), Schlegel says, "This animal which was gotten by Herr Noel [Delamorinière] and brought back by him from his journey, is under the name *Hyla septentrionalis* in the Paris Museum."

The foregoing brief remark by Schlegel is his only reference to *Hyla septentrionalis*. Stejneger, writing in 1905, considered the name, as published by Schlegel, to be an absolute *nomen nudem*. Yet, reference to the International Rules elicits no support for Stejneger's contention. Article 25 is clear: "The valid name of a genus or species can be only that name under which it was first designated on the condition: a) That (prior to January 1, 1931) this name was published and accompanied by an indication, or a definition, or a description . . ." Schlegel's intent with respect to the use of *Hyla septentrionalis* is unambiguous, for he says, in connection with his discussion of *Hyla chalconota*, "This animal . . . is under the name *Hyla septentrionalis* . . ." The phrase "This animal" refers of course to Schlegel's *Hyla chalconota*, with which he believed the Paris Museum's *Hyla septentrionalis* to be identical. Hence, *Hyla septentrionalis* Schlegel was published and accompanied by a clear indication and description, viz., Schlegel's own reference to, and description of, his previously-described *Hyla chalconota*. Despite the fact that *Hyla septentrionalis* originated as a manuscript name by Tschudi, Schlegel's publication of it causes it to acquire nomenclatural status. Opinion 4 (published October 18, 1907) is directly applicable to this situation: "Manuscript names acquire standing in nomenclature when printed in connection with the provisions of Article 25, and the question as to their validity is not influenced by the fact whether such names are accepted or rejected by the author responsible for their publication." Thus, *Hyla septentrionalis* Schlegel, 1837, is nomenclatorially valid, but applicable only to *Hyla chalconota* Schlegel, 1837, of which it is a still-born synonym.

Boulenger seems not to have had Schlegel's *Abbildungen* before him while preparing his synonymy and description of *Hyla septentrionalis*, for he does not mention Schlegel's work in the synonymy of this species (1882: 368). Under the name *Hyla septentrionalis* appears first *Trachycephalus marmoratus* Gunther, followed by *Dendrohyas septentrionalis* Tschudi (as well as a number of other synonyms). Obviously, in using the name *Hyla septentrionalis*, Boulenger was accepting Tschudi as first

describer, in apparent ignorance of Schlegel's earlier description, and transferring the species to the genus *Hyla,* of which he considered *Trachycephalus* to be a straight synonym. However, as pointed out here, *Hyla septentrionalis* Boulenger, 1882, is a straight homonym of *Hyla septentrionalis* Schlegel, 1837, and must therefore be rejected. As pointed out by Stejneger *(loc. cit.),* the name next in chronological sequence, is the *Trachycephalus marmoratus* of Duméril and Bibron, 1841, but this is not available since referral of *marmoratus* to the genus *Hyla* results in the combination *Hyla marmorata,* which is antedated by *Hyla marmorata* Daudin, 1801. The name *Trachycephalus insulsus* Cope (1863: 43) is next in order, and it is this name which must be applied to the large frog of Cuba, the Florida Keys, and certain West Indian islands. Thus, the species must be known as *Hyla insulsa* (Cope). If subspecific relationship is recognized among the large tree frogs of the Antilles, as maintained by some authorities *(cf.* Barbour, 1937), with whom I do not agree, the Hispaniolan form must be known as *Hyla dominicensis dominicensis* Tschudi), 1838; the related frog of Jamaica becomes *Hyla dominicensis brunnea* (Gosse), 1851, while the Cuban (and Floridian) form must then be known as *Hyla dominicensis insulsa* (Cope), 1863.

Dr. Hobart M. Smith has reviewed these notes in manuscript form, and I am grateful to him for several helpful suggestions and criticisms.

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LARCHMONT, NEW YORK

Notes on the Type Locality of *Eurycea multiplicata* (Cope)*

By HAROLD A. DUNDEE

When Cope described *Spelerpes multiplicatus* in 1869 (Proc. Acad. Nat. Sci. Phila., 21:105), he spoke of the type locality as "Red River, Arkansas." At that time much of Oklahoma was called Arkansas. In 1917 Stejneger and Barbour (Check List N. A. Amph. and Rep., 1st Ed.) called the type locality "Red River in eastern Oklahoma." I do not know their source of information, but Dunn (1926, Salamanders of the Family Plethodontidae, Smith Coll. Anniv. Publ.) remarks that "Cope says Arkansas but the expedition narrative makes it clear that they were collected in Oklahoma. See Marcy's Exploration of the Red River." In a personal communication dated Feb. 14, 1949, Dr. Dunn informs me that he does not know where he got the idea of Marcy's expedition, but perhaps from Stejneger.

In response to an inquiry to Dr. Doris Cochran at the United States National Museum I have received the following answer:

"Original entry in the U.S.N.M. catalog made on August 2, 1858 and reads only 'Ark.' (which was crossed out by me and Okla. added in pencil, at Dr. Stejneger's direction) 'Dr. Edwards, 7 specimens.' The 7 are now only 5! Dr. Stejneger put a great deal of effort, time, and attention to ferreting out the true localities of these early collections, and I am sure that if he said these specimens were from the Red River in eastern Oklahoma, he must have had much evidence for his conclusion."

Dr. Cochran goes on to say that Stejneger and Barbour had much correspondence between them on the check list. The nature of the correspondence led Dr. Cochran to assume that Barbour had a great deal of the check list prepared in his office. According to Benjamin Shreve at the Museum of Comparative Zoology the MS was not preserved.

Our last resort, therefore, seems to be to trace the activities of Dr. Edwards (Dr. L. A. Edwards, U.S.A.) to determine where he made collections. The only association between Dr. Edwards and Marcy seems to be that both were stationed at Ft. Towson. According to the records of the Surgeon General's Office in the National Archives, Edwards arrived at Fort Towson on Sept. 11, 1852, and left May 8, 1854. These dates are later than those of the Marcy expedition. It is very unlikely that Marcy's party could have made the collection. Baird & Girard's account of the reptiles and amphibians of the expedition (1854, Expl. Red. R. La., U.S. House Ex. Doc. (unnumbered), 33rd Cong., 1st Sess.) lists only two batrachia taken, a frog and a toad. In addition the expedition worked along the Red River only as far east as the mouth of the Washita River near Preston, Texas. It is possible, but I believe improbable, that *E. multiplicata* occurs that far west since the ecological situation is not one in which we would expect to find the species. The most westerly station known to me is near Garvin, McCurtain County, Oklahoma.

As for Edwards' collection, I note that it is listed as "less strictly official" and made in "Texas and Arkansas" (Expl. & Surv. Pac. RR

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*Contribution of the University of Oklahoma Museum, Division of Zoology.

Route from the Miss. R. to the Pac. Ocean, v. 8, part 1, p. xvi of the introduction). In the Annual Report of the Smithsonian Institution (1854, p. 43) Edwards is listed as donor of 10 jars of reptiles and insects, as well as other items from Fort Towson, Arkansas. I have examined some lists of USNM specimens (Cope, 1900, Croc., Liz. and Snakes of N. A., Report U. S. Nat. Mus. for 1898; Cope, 1889, Batrachia of N. A., U. S. Nat. Mus. Bull., No. 34; Blanchard, 1921, A Revision of the King Snakes: Genus *Lampropeltis,* Bull. U. S. Nat. Mus., No. 114) for every species likely to occur in the Red River region of eastern Oklahoma and Arkansas and subsequently found several specimens listed as being collected by Edwards at Fort Towson and at Red River, Arkansas. In addition a record from Fort Dawson, Arkansas, was listed but this seems to be an error in transcription since the National Archives have no information that indicates that such a fort existed. A specimen of *Phrynosoma cornutum* is listed from Fort Townsend, but that fort was on the coast of Washingon, an area not within the range of *P. cornutum.* Again is seen the likelihood of an error in transcription.

From the above evidence it appears that the collections made by Edwards were almost wholly from Fort Towson or vicinity. It is highly probable, then, that the type locality of *Eurycea multiplicata* is near Fort Towson, Choctaw County, Oklahoma (to which it is hereby restricted), a point which is slightly less than 20 miles west of known collection stations for this species.

Additional Records of *Hypsiglena* from Oklahoma, with Notes on the Behavior and the Eggs*

By HAROLD A. DUNDEE

Only four specimens of *Hypsiglena torquata texana* Stejneger have been reported from Oklahoma, all from the vicinity of Cache, Comanche County. Tanner (1944) listed these, and others from Clark and Barber counties, Kansas. On the basis of these records he included all of western Oklahoma as being within the range of the subspecies, *texana.* On June 5 and 6, 1949, I secured eight additional specimens. These tend to substantiate Tanner's interpretation of the range. Four were taken beneath stones on a sandstone knoll, 1½ miles E of Tegarden, Woods County; two were secured six miles SW of Erick, Beckham County; and two were taken two miles S of Mangum, Greer County. The latter two areas are in a mesquite-savanna area and have many outcrops of gypsum and dolomite. The Woods County location is but one-fourth mile from extensive gypsum outcrops. A collection of reptiles from Comanche County recently presented to the University of Oklahoma Museum includes several specimens of *Hypsiglena.* It is worthy of note that these specimens, like the original four reported from the county, were taken in rocky situations in the plains bordering the Wichita Mts. As yet there are no records from the mountains proper.

Most previous collections of reptiles in western Oklahoma have been made during the dry summer months. The eight night snakes secured by

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*Contribution of the Oklahoma Biological Survey and the University of Oklahoma Museum.

me were taken several days after rains, while the ground was still moist. Other reptiles associated with them include *Sonora e. episcopa* and *Leptotyphlops dulcis* (*L. d. dulcis* in Beckham County and *L. dulcis dissecta* in Woods County), and *Eumeces obsoletus*. The presence of small moisture-sensitive species such as *Sonora* and *Leptotyphlops* suggests that *Hypsiglena* is rarely taken there only because it has not been sought at the proper season.

Nearly all specimens appeared as if surprised when discovered and made many motions as if they were looking for a place to burrow. One specimen flattened the head and struck in such a way as to appear quite vicious. A similar display was reported by Fitch (1949) for *H. t. nuchalata.*

Several night snakes were kept alive during the summer in a glass terrarium. The room was artificially lighted and the temperature ranged from 84-86° F. Several inches of sand were spread on the cage floor and objects were provided as hiding places.

While returning from my collecting tour I had placed three *Leptotyphlops* in a jar with two *Hypsiglena.* On arrival at the laboratory one *Leptotyphlops* was missing suggesting ophiophagy. Two days later when the *Hypsiglena* had become settled in their cages a *Leptotyphlops* was introduced into a terrarium containing four night snakes. All of the latter were in the open. As the worm snake crawled past a night snake it was seized at midbody and held. No chewing motions were detected. After 15 seconds the worm snake was removed from its captor's mouth and isolated. Although observations were made from time to time for several days, no ill effects were evident. Throughout the summer occasional *Sonora, Diadophis,* and *Sceloporus* were offered to the night snakes but the latter made no efforts to attack them.

During the period of captivity the *Hypsiglena* spent as much time in the open as in hiding. Many burrows were made in the sand and these were used as hiding places more frequently than were the objects that had been provided. Some tendency towards gregariousness was noted in the open but not in hiding. Little excitement was displayed by these snakes when they were disturbed. In fact, they seemed to possess a great curiosity and would frequently follow my finger about as if fascinated by it. No attempts were made to bite the finger.

The only report of the breeding habits indicated the presence of eggs within the body (Conant and Bridges). On July 7 one female from Beckham County laid six eggs. An attempt was made to hatch four of these but during one of my absences the eggs desiccated. The six eggs were measured on July 8 and the range in length determined as 22-28 mm., averaging 24.7 mm. The median diameters ranged from 10.0-11.5 mm. One egg was kidney-shaped and another had a hump in the middle. The weights ranged from 1.6-1.9 grams, the average being 1.75 grams. The parent was weighed the day following egg deposition and at the same time her diameter was determined. She was then killed and her length recorded. The weight was found to be 11.5 grams, diameter 8 mm., and length 338+49=387 mm. It is interesting to note that the smallest egg was 25% greater in diameter than the snake. The total combined weight of the eggs was 10.5 grams, about 91% of the weight of the parent. The total combined length of the eggs, which apparently had been arranged linearly in the body, was 148 mm., about 44% of the total body length.

KANSAS STATE COLLEGE OF AGRICULTURE AND APPLIED SCIENCE LIBRARY MAY 6 1954 MANHATTAN KANSAS

Appreciation is expressed to the Oklahoma Biological Survey under whose auspices the snakes were collected. The specimens have been deposited in the University of Oklahoma Museum, Division of Zoology.

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DEPT. OF ZOOLOGY, UNIVERSITY OF KANSAS,
LAWRENCE, KANSAS

CNEMIDOPHORUS TESSELATUS (SAY) IN OKLAHOMA.*—A single specimen of *Cnemidophorus tesselatus* (Say) (=*C. grahamii* Baird and Girard) from the Oklahoma panhandle, 5 miles north of Kenton, Cimarron County, adds a new reptile to the known list for the state. This record also adds weight to the arguments of Smith and Burger (Bull. Chi. Acad. Sci., 8(13)) which show that *Ameiva tesselata* Say= *Cnemidophorus grahamii* Baird and Girard. Smith and Burger point out that the original description by Say fits *Cnemidophorus grahamii* Baird and Girard, but no specimens of either *C. tesselatus* or *C. grahamii* have been taken anywhere near the type locality since the types were collected. The specimen was secured on August 10, 1949, by a mammalogy class led by the senior author. Capture was made in the pinon-juniper association in a canyon on the north side of Black Mesa at an elevation of approximately 4400 feet. Earlier the junior author had suspected the presence of the species in this region from descriptions of a large lizard given by members of a 1948 University of Oklahoma field party.

Our specimen fits the description of *C. grahamii* (auct.) in most particulars. The dorsal pattern, however, is broken up into dots and dashes to the exclusion of distinct dorsal crossbars. Extensive collecting in Fremont County, Colorado should yield topotypes of this species, thus substantiating the original description. The same vegetational association occurs in Fremont County, thereby providing an ecological situation similar to that of Black Mesa.

It should be pointed out that our specimen was the only one seen during the two weeks spent in the vicinity. During that time *C. sexlineatus* were seen frequently in similar situations. Extensive collecting by the University of Oklahoma Museum Expedition in 1926 failed to reveal the presence of *Cnemidophorus tesselatus* in the area.

The specimen has been deposited in the Oklahoma A. and M. Museum of Zoology where it bears the catalog number OAM 2015.—BRYAN P. GLASS, Dept. of Zoology, Okla. A.&M. College, and HAROLD A. DUNDEE, University of Oklahoma Museum of Zoology.

*Contribution No. 154, Oklahoma A.&M. Zoology Department.

Some Additional Remarks on the Status of the Species *Sceloporus occidentalis*

By FREDERICK A. SHANNON

In 1898 Cope proposed that *occidentalis* be recognized only as a subspecies of *Sceloporus undulatus*. He felt that there were no consistent morphological differences between the two forms, and that they should not be specifically separated on the basis of geographic distribution alone. Burt came to a similar conclusion in 1933 on the basis of his interpretations of *Sceloporus occidentalis biseriatus* and *Sceloporus undulatus elongatus*. He claimed that the ranges of these two subspecies came together in western Utah and eastern Nevada and used as intergrade examples specimens from White Pine County, Nevada, and from the more western Eureka County. Smith (1938) maintained that the two were specifically distinct and probably did not overlap. He stated that intergradation between the two species was not to be expected, and that if it did occur it would probably be between *Sceloporus undulatus tristichus* and *Sceloporus occidentalis biseriatus*. His map published in 1946 shows no contact or overlap of subspecies of the two species.

The writer, while examining Arizona herpetological records in the collection of Brigham Young University, found three lizards collected from Horseshoe Island, Lake Meade, Nevada, by Dr. V. M. Tanner in May of 1934. These lizards, which had been given a tentative identification of *Sceloporus occidentalis biseriatus* were of interest, if for no other reason than that they had been collected half way between the previously known limits of *o. biseriatus* and *u. tristichus*. Examination revealed an affinity perhaps closer to *u. tristichus* than to *o. biseriatus*, but certain similarities to the latter.

The following table (taken largely from Smith, 1946) itemizes some of the differences between *S. o. biseriatus* and *S. u. tristichus*.

	S. o. biseriatus	*S. u. tristichus*
1.	Undivided (single) gular patch	Divided (double) gular patches
2.	Gular patch lacking in females	Gular patches present in females
3.	Femoral pores 13-19 (16.8)	Femoral pores 13-22 (16.7)
4.	Scales between femoral pores 8-12	Scales between femoral pores 3-9 (6)
5.	Dorsal scales 35-44 (40)	Dorsal scales 35-46 (42)
6.	Scales on posterior surface of thigh abruptly differentiated from dorsal scales of same member; median posterior scales not distinctly larger than adjacent lateral posterior scales	Scales on posterior surface of thigh gradually merging with larger dorsal scales of same member; at least the median posterior scales distinctly larger than the adjacent lateral posterior scales
7.	Scale rows immediately posterior to femoral pore series keeled	3 or 4 scale rows immediately posterior to femoral pore series not keeled
8.	Entire interior of lateral nuchal pocket covered with small granular scales	Upper part of interior of lateral nuchal pocket lined with scaleless skin

Numbers 3 and 5 of the above table may be dismissed from consideration in the present small series of three specimens.

These specimens are compared and contrasted as follows:

	BYU 437♀	BYU 3681♀	BYU 3680♂
a.	gular markings absent	gular markings absent	divided gular patches
b.	6 scales between femoral pores	8 scales between femoral pores	7 scales between femoral pores
c.	3rd row back of femoral pores keeled	4th row back of femoral pores keeled	3rd or 4th row back of femoral pores keeled
d.	lateral nuchal pockets granulated throughout	lateral nuchal pockets granulated throughout	small bare patch in lateral nuchal pockets

The condition of the scale rows immediately posterior to the femoral pore series in the three specimens was intermediate between that found in *o. biseriatus* and that of *u. tristichus*. Unfortunately the dorsal color pattern has been so badly discolored by the preservative that it is useless for comparison.

Trends toward *S. o. biseriatus* are shown by a lack of gular patches in the two females, the presence of 8 and 7 interfemoral scales in Nos. 3681 and 3680, and granulation throughout the lateral nuchal pockets in Nos. 437 and 3681.

Two specimens of *Sceloporus undulatus tristichus* from Yarnell, Yavapai County, Arizona, in the private collection of the author have the lateral nuchal pouches scaled throughout. One of these, No. 642♂, has the second scale row posterior to the femoral pore series keeled. The specimens are otherwise typical.

It should be emphasized that no attempt to determine the status of *S. occidentalis* has been made here. The purpose of the article has been to point out that the gap between the two presumed species, *Sceloporus occidentalis* and *undulatus*, has been bridged through *S. o. biseriatus* and *S. u. tristichus*. It is hoped that this information may stimulate further search in the Lake Meade area for additional specimens. Whether the two species hybridize or intergrade can only be settled when more specimens are available from the vicinity of Lake Meade, and when a large series of both *S. o. biseriatus* and *S. u. tristichus* has been examined from many different localities for the possibility of west-east gradients.

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Insect Food of the Sagebrush Swift in Box Elder County of Utah

By G. F. KNOWLTON and A. C. VALCARCE

This report covers one phase of the studies being conducted regarding the food habits of lizards found on grazing lands. Among the injurious insects found to be eaten by the sagebrush swift are the sugar beet leafhopper, grasshoppers, false chinch bugs, lygus bugs and other insects which move from the range lands into cultivated areas. Such pests cause extensive damage to Utah crop plants nearly every season. Quite a series of sagebrush swifts, *Sceloporus graciosus graciosus* (Baird and Girard), have been collected and their stomachs preserved. Most of the lizards included in this study were taken among sagebrush, *Artemisia tridentata,* rabbitbrush, usually *Chrysothamnus nauseosus* and *C. viscidiflorus,* or in areas of Russian thistle, *Salsola pestifer,* occurring near sagebrush, rabbitbrush and *Gutierrezia.* This report is a summary of the insects recognized from the contents of 193 stomachs. All stomachs were examined in the laboratories at the Utah State Agricultural College. The insects found were as follows:

The 79 Orthoptera recognized included 36 grasshoppers of which 3 were in the genus *Trimerotropis,* 4 were *Melanoplus femur-rubrum,* 6 *M. mexicanus,* 1 *Mermiria,* 1 *Aulocara elliotti,* besides 42 grasshopper nymphs and 1 cricket. Only 1 termite (Isoptera) was found. There were 3 Neuroptera; of this number 2 were larvae and one an adult Chrysopidae. One damsel fly (Odonata), and 9 thrips (Thysanoptera) were found. Of Homoptera 199 were present; this number was inclusive of 88 adult leafhoppers, 80 of these being adult beet leafhoppers, *Circulifer tennelus,* besides specimens of *Thamnotettix venditarius, Aceratagallia sanguinolenta,* and 2 *Phlepsius spatulatus;* 103 nymphal leafhoppers, of which 102 were beet leafhopper nymphs; 2 Fulgoridae, 1 being a *Scolops angustatus;* and 6 aphids. Of 163 Hemiptera, 73 were false chinch bugs, *Nysius ericae* and *Nysius* spp. and 21 *Nysius* nymphs; 15 *Geocoris,* 12 being *G. decoratus;* 1 *Lygaeus kalmii,* 1 *L. reclivatus,* 3 *Lygus hesperus* and five nymphs of the same, 2 *L. oblineatus,* 2 other *Lygus* and 2 additional Miridae, 3 Cydnidae, 1 Reduviidae, 3 adult and 1 nymphal Pentatomidae, 1 Phymatidae, 1 Nabidae, and 1 Corizidae, the rest being unidentified Hemiptera of which 14 were nymphs. Of Coleoptera 111 were counted, of which 22 were Chrysomelidae with 13 of them being fleabeetles; 21 Coccinellidae, 2 being *Hippodamia convergens,* 2 *H. quinquesignata,* 9 *H. lunatomaculata apicalis,* 1 *H. americana,* 1 *Coccinella perplexa,* and 6 Coccinellidae larvae; 3 Elateridae, 3 Scarabaeidae (one of these a white grub larva), 16 Carabidae, 1 Cucujidae, 1 Cicindelidae, 1 Tenebrionidae larvae, 1 Histeridae, 1 Cleridae, and 3 Curculionidae. Of the 104 Lepidoptera which were present, 84 were larvae, 10 of them being diamond-back moth larvae, *Plutella maculipennis,* and one was a lepidopterous pupa. Of Diptera 36 were found, and these consisted of 1 Muscidae, 2 Sarcophagidae, 1 Calliphoridae blue-bottle fly, 1 Asilidae, 1 Tipulidae, 1 *Tabanus* horse fly, 2 larvae, 1 pupa, the others

being miscellaneous Diptera. The 811 Hymenoptera included 690 ants, of which 37 were *Formica,* including *F. rufa* and *F. fusca* with *Pogonomyrmex occidentalis* being especially common; also 3 wasps, 19 native wild bees, mostly small, including 1 Andrenidae; 8 Ichneumonidae, 1 Mutillidae, 1 Braconidae, 1 Chalcididae, 3 Sphecidae, and 1 Chrysididae cuckoo wasp. Most stomachs also held varying amounts of insects fragments, not listed above. A few stomachs contained insect eggs. In addition to the insects, 53 Arachnida, largely miscellaneous spiders and at least 9 mites, were recognized. A few of the lizard stomachs also contained small amounts of plant material and sand particles, evidently taken by accident while capturing living animal food.

UTAH STATE AGRICULTURAL COLLEGE, LOGAN, UTAH.

FOOD OF THE PRAIRIE RATTLESNAKE (*Crotalus v. viridis* Rafinesque).The food of our western crotalids is not well known. This note incorporates stomach analyses of seven prairie rattlesnakes from the vicinity of Provo, in the extreme southwestern part of South Dakota. The snakes were collected by Lt. Joseph A. Pollack on the Black Hills Ordnance Depot in the early fall of 1947. Of the seven, one was a male. Average length, from snout to base of rattle, was 863 mm. (extremes 925 mm.—608 mm.). Every snake contained food. All individuals had eaten field mice, *Microtus sp.* Two snakes contained in addition the remains of lizards, *Phrynosoma.* On the basis of known distribution of these lizards, the lizards eaten by the snakes were considered to be *Phrynosoma douglassii brevirostre* (Girard).—W. J. HAMILTON, JR., Cornell University, Ithaca, New York.

RECORD OF *XANTUSIA VIGILIS* BAIRD FROM SOUTHERN NYE COUNTY, NEVADA.—On January 1, 1947, while on a field trip in southern Nye County, the author collected four specimens of *Xantusia vigilis* Baird on a ranch located approximately in the central portion of Ash Meadows. All four of these lizards were found while I was digging with a shovel into a rubbish pile which consisted principally of litter of fallen leaves, humified soil, small pieces of partially rotted wood, and scraps of graphite roofing paper. They were uncovered at various depths in the pile varying from six inches to nearly one foot. When taken out from under the rubbish, all specimens were quite cold and very sluggish indicating that they had been hibernating there.

It is interesting to note that two adult specimens of *Uta stansburiana stejnegeri* Schmidt were collected in the same habitat as the yucca night lizards.

Although Stebbins included southern Nye County in the range of *Xantusia vigilis* in Nevada (Amer. Midl. Nat., 39(1):98, 1948), no actual specimens have been recorded from this area prior to this time. All the specimens mentioned above are preserved in the author's private collection.—BENJAMIN H. BANTA, P.O. Box 605, Reno, Nevada.

Frequency of Shedding in Injured Snakes

By C. B. PERKINS

Wilfred T. Neill (1949, Herpetologica, vol. 5, p. 115) describes the sheddings of an injured *Drymarchon corais couperi* and concludes that the short intervals between sheddings occurring until the injury was healed were due in some manner to the injury itself. The snake was injured when received and shed 28 days later. After that the intervals before the wound healed were 27, 17, 18, 23 days and after healing, 31, 27 and 28.

Injured snakes may shed more frequently than uninjured ones but I do not believe that Neill has proved this point.

We have no shedding records of an injured *Drymarchon* and as the frequency of shedding seems to differ in different species, as well as in different individuals, the following record for *Naja nivea* makes a poor comparison. It does show, however, that this specimen of *nivea* did not shed more frequently before than after its wound was healed. The wound was not on the head which, as Neill says, might make a difference.

A *Naja nivea* (about 4 feet 6 inches in length) received February 22, 1937, with an open sore about a foot from the head, shed April 27, 1937, and not again until August 25, 1937 and then December 7, 1937. Two ribs worked their way out of the wound in April and although I do not have the date at which the wound was healed it was before June 1, 1937. The snake shed as follows, frequency being shown in parentheses: 1937 (10 months)-(3), 1938-(6), 1939-(7), 1940-(2), 1941-(3), 1942-(4), 1943-(4), 1944-(4), 1945-(6), 1946-(4), 1947-(5), 1948-(4), 1949-(4).

A *Drymarchon c. couperi* (about 6 feet long), received December 11, 1945, apparently had never had an injury. It shed as follows: 1946-(8), 1947-(12), 1948-(14), 1949-(14). It shed January 14, 1946, then March 1, 1946, and not again until May 5, 1946, and it is possible that a shedding in between those dates was overlooked as this is by far the longest interval (65 days). One time each the interval was 65, 50, 49, 43 and 40, and twice 46 days. The shortest periods were 19 (once), 20 (twice) and 21 (once) days. Five times the interval was 25 days and 6 times 26 days. Intervals of from 25 to 32 days occurred 24 times out of the total of 48 sheddings (50 per cent). Intervals of from 33 to 38 occurred once or twice. All but one of the intervals of more than 40 days occurred in the first year.

A *Drymarchon corais erebennus* (about 5 feet long), received February 3, 1946, had had a nose injury, apparently from rubbing on a screen cage, but it was completely healed before we received the snake. It shed as follows: 1946 (11 months)-(11), 1947-(15), 1948-(15), 1949-(16). The longest period between sheddings was 45 days (once). The shortest interval was 17 days (once), followed by 18 (once), 19 (4 times), 20 (5 times) and 21 (twice). Intervals of from 22 to 27 days occurred 31 times out of the total 57 sheddings (54.4 per cent). Intervals of from

29 to 38 occurred once or twice. All but two of the intervals over 30 occurred in the first 7 months.

Why the two *Drymarchon* should shed less frequently in the first year, I have no idea. Change of environment, different food, irritation by the public, confined quarters, etc., may be contributing factors.

The seven sheddings of Neill's injured *couperi* averaged 24.4 day intervals. The last seven sheddings of our uninjured *couperi* average 24.0 and the last seven of the *erebennus* average 20.2 days. With the different conditions under which these snakes were kept, the differences between these figures probably mean very little.

Conditions in the San Diego Zoo reptile house, which is kept at 80 degrees F., are so different from those of Stabler (Copeia, 1939, p. 227) and Carson (Copeia, 1945, p. 222) that no comparisons can be made.

ZOOLOGICAL SOCIETY OF SAN DIEGO,
SAN DIEGO, CALIFORNIA

Lizards in the Diet of Captive *Uma*

By CHARLES E. SHAW

The food habits of the fringe-footed sand lizards of the genus *Uma* are comparatively well known, published records of stomach contents having listed various arthropods as well as leaves and buds of plants. But, as far as I know, there are no recorded instances of these lizards preying upon their own or other species.

At the San Diego Zoo, observation of a group of 10 *Uma notata notata* from several localities in southwestern California and two *Uma notata cowlesi* from Punta Peñasco, Sonora, Mexico, revealed the surprising habit of saurophagy among several specimens of the subspecies *notata*. Two adult males, about 9 inches in length, from the sand hills 18 miles west of Yuma, Imperial County, California, were observed to kill and eat two *Uma n. notata* about 4½ inches in length as well as one adult *Urosaurus graciosus*, one adult *Coleonyx v. variegatus*, a juvenile *Cnemidophorus h. beldingi* and a juvenile *Sceloporus o. biseriatus*. A young female *notata* from the same locality was seen to eat an adult *Uta s. hesperis*. An adult male from near Pinto Mountain, Baja California, ate adult *Coleonyx v. variegatus* on two occasions. In addition, the *Uma* undoubtedly accounted for several lizards that mysteriously disappeared or were found dead. An adult *Uta s. stejnegeri* disappeared (except for its tail) a day or two after its introduction into the cage and was presumed to have been eaten. Two half-grown *Uma n. notata* were killed but were apparently too large to eat, and an adult female *Callisaurus d. gabbii* placed in the cage one afternoon was found dead the next morning, its skull crushed.

In securing and subduing its prey a fringe-foot usually seized the victim directly by the head and crushed its skull by repeated chewing. Occasionally the prey was caught by a leg, the *Uma* chewing the leg sometimes to the point of almost severing it, then re-seizing the lizard

by the head and killing it. Once a fringe-foot caught a *Coleonyx* by the tail, causing the gecko to drop this member, which, wriggling violently, was eaten, while another *Uma* seized the gecko by the head as it attempted escape.

It should be emphasized that the saurophagous appetite of these captive *Uma* did not appear to result from hunger as all were well fed on a diet of mealworms and finely chopped lettuce, and were, with but one exception, in excellent condition. The exception was the Pinto Mountain specimen, which, although in good condition when received, only occasionally took mealworms and was never observed to eat the chopped lettuce. However, without hesitation, it caught and devoured two specimens of *Coleonyx v. variegatus* which were introduced into the cage at different times.

ZOOLOGICAL SOCIETY OF SAN DIEGO,
SAN DIEGO 12, CALIFORNIA.

The Gila Monster in New Mexico

By CHARLES E. SHAW

As indicated in the introduction to his paper on the herpetology of New Mexico (1924), Van Denburgh believed *Heloderma suspectum* does occur in New Mexico. On page 190 he states: "I have endeavoured to include in the following list only those species and subspecies which certainly have been taken within the present boundaries of New Mexico." Later, however, under his discussion of *H. suspectum* on page 211 his remarks are contradictory to those expressed earlier, for he notes that "although this lizard has been credited to New Mexico many times, there seem to be no definite locality records and no specimens from the state."

Evidently unknown to Van Denburgh at the time of preparation of his New Mexico list was the record of a Gila Monster reputedly taken at Silver City, Grant County, New Mexico. Mr. C. M. Bogert has kindly supplied the information that this specimen was donated to the American Museum of Natural History by D. G. Elliott at an early but unknown date and that it was later exchanged with the Albany Museum of South Africa. Although there appears to be no reason to doubt the authenticity of the data ascribed to this specimen, it is possible that Silver City may have merely represented the point of shipment rather than the actual locality of collection, such labeling having been an apparently common practice with early collectors.

Whatever the basis for Van Denburgh's inclusion of *H. suspectum* in his New Mexico state list, the fact remains that the literature has hitherto contained no reliable locality records for this lizard from within the present limits of New Mexico. Van Denburgh (1922, p. 473) has listed specimens from Duncan, Greenlee County, and Cave Creek, Cochise County, Arizona, and both of these localities are but a very few miles to the west of the Arizona-New Mexico state line. In view of

the proximity of these Arizona records to the southwestern New Mexico border the eventual demonstration of the occurrence of Gila Monsters within the present state boundaries of New Mexico has seemed probable.

Recently, Mr. C. L. Jones of San Diego donated to the reptile collection of the San Diego Zoo an adult Gila Monster that he and Mr. Robert J. Read of Steins, New Mexico, had collected about six miles southwest of Steins, Hidalgo County, New Mexico. Mr. Jones told me that the specimen was taken while it was walking across a road between 4 and 5 p.m. on September 26, 1949. The locality of collection lies in the Peloncillo Mountains near the John Bull Mine and is approximately one and one-half miles east of the Arizona-New Mexico state line. It is of interest to note that the Duncan, Greenlee County, Arizona, record given by Van Denburgh (l.c.) lies some 35 miles to the north and west in the same range of mountains.

In answer to my query concerning the presence of Gila Monsters in the vicinity of Steins, Mr. Robert J. Read writes that, "They are fairly common in this area; found on both sides of the Peloncillo Mountains. I have been told that they have been seen in the foothills of the Pyramid Mountains (south of Lordsburg) by prospectors and cowboys. I myself have seen them as far east as the Animas Valley—8 miles or more east of Steins."

To these New Mexican *Heloderma* records noted above there may be added other resports of Gila Monsters in the state based on the observations of several witnesses. Mr. Weldon D. Woodson, who is currently engaged in a study of *Heloderma,* has very kindly permitted me to quote excerpts from letters he has received concerning the occurrence of Gila Monsters in New Mexico. The letters indicate that these lizards are not uncommon in extreme southwestern New Mexico and that their range in the state at least includes the western portion of Grant and Hidalgo Counties.

"We have quite a few Gila Monsters in the area immediately around Redrock, New Mexico, which is approximately fifty miles southwest of Silver City. I would suppose that from there south, a person could find quite a few of these lizards. Quite a number of Gila Monsters were found by Burton Dwyer, state highway engineer, and Alvin Parker, who was a bulldozer operator working for the state at the time. At certain seasons of the year, Gila Monsters in this particular locality are quite common." August 29, 1944. Stuart Stirling, County Extension Agent, Silver City, New Mexico.

"I have your letter of April 11 referring to statement made by Mr. Stuart Stirling, County Agent, Grant County, concerning the finding of Gila Monsters by me in the vicinity of Redrock, New Mexico.

"We found two Gila Monsters, measuring about 14 inches in length, along the roadside about two miles down the Gila River from the Redrock store and post office. It is my recollection that the monsters were picked up in the afternoon, say about 4:00 or 5:00 o'clock, in the spring of 1929, some time during the month of March or April.

"I do not recall that the finding of these monsters was considered anything unusual, as a matter of fact, it is my recollection that they were considered rather common in this locality." April 13, 1945, Burton G. Dwyer, Santa Fe, New Mexico.

"Answering your inquiry of April 2 to Professor Crawford concerning Gila Monster, would say that neither he nor I have ever collected this species in New Mexico. However, Dr. Hershey, of our department, saw the remains of a specimen killed near Steins, New Mexico, on October 5, 1944. In conversation with ranchers in that area he learned that this lizard is commonly seen in the mountains west of Lordsburg, particularly near a small town called Road Forks." April 9, 1945, J. R. Eyer, State Entomologist, New Mexico College of Agriculture and Mechanic Arts, State College, New Mexico.

"I know very little about the Gila Monster and have seen only one in this county since I came here in March, 1942. The one that I did see had been run over by an automobile on the Lordsburg-Douglas highway, about 30 miles from Lordsburg, at Granite Gap." May 14, 1945, Paul E. Hudson, County Extension Agent, Lordsburg, New Mexico.

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ZOOLOGICAL SOCIETY OF SAN DIEGO,
SAN DIEGO 12, CALIFORNIA.

Notes on Arizona Species of *Thamnophis*

By WILLIAM H. WOODIN, III

T. elegans vagrans (Baird and Girard), Wandering Garter Snake.

I have had but scant experience in the field with this species, during brief collecting trips into northern Arizona. It seems to be a relatively abundant form, very common in some areas, and by no means restricted to the immediate vicinity of water. Two were found on a dry, grassy plain near Flagstaff, at an elevation of 7000 feet, several hundred yards from the nearest stream. Specimens while yet in the collecting sack devoured a young horned lizard (*P. d. hernandesi*), and attempted to eat another snake of the same species.

T. eques cyrtopsis (Kennicott), White-bellied Garter Snake.

This is by far the commonest snake in many canyons and mountain streams of southern Arizona. It seems to prefer mountainous and hilly

areas, and is uncommon far from water, unless it be dried-up stream beds. Specimens when captured generally make good use of their scent glands, but seldom bite. It appears to be the smallest of our garter snakes with the average adult size probably less than 24 inches. Captive specimens take frogs and toads readily.

T. marcianus nigrolateris (Brown), Sonoran Garter Snake.

This snake can be collected during the daytime, especially by turning over boards and the like, but it is essentially a night prowler. While never common as compared to the other garter snakes it can be hunted with some success by driving the roads at night; most of my specimens have been taken on such trips. It seems to prefer low drainage areas; I have never collected this snake in the mountains. Large individuals may reach 29 inches or more in length. My captive specimens have eaten dead lizards. One brood of 12 was born July 5, the young averaging a little over 8 inches; another brood of 18, born July 15, averaged about 8 inches.

T. subcarinatus megalops (Kennicott), Mexican Garter Snake.

I have found this snake to be very common along the system of irrigation ditches near the Rillito wash, north of Tucson. At one spot in particular three or four could generally be seen, lying above a valve controlling the flow of water out of a tank or artificial pond. When cornered, these snakes frequently flatten their body and lunge repeatedly at the intruder. Large specimens incline to considerable stoutness, and I have taken individuals at least 39 inches in length. I have never seen *T. e. cyrtopsis* in this valley habitat, nor have I ever taken *T. s. megalops* in a canyon or mountain stream locale. This difference in environment preference is quite striking in the Tucson area at least, although the two forms may quite possibly occur together in intermediate areas such as washes close to the mountain bases. One brood of 25 *T. s. megalops* was born June 15; the young averaged about 9½ inches.

T. rufipunctatus (Cope), Spotted Garter Snake.

I have collected this curious snake only in Oak Creek Canyon, Coconino County. Here it appears to be common enough, ten specimens being taken and another seen in an hour or so of collecting on an August afternoon. Elevation ranged between 5000 and 5500 feet. No luck was had in shady areas of fast moving water, all the snakes being taken in sunny, rather open places, mostly of relatively quiet water. All were in or near the water, diving to the bottom when surprised; none was observed swimming on the surface as is so often seen with *T. e. cyrtopsis*. When captured they made no attempt to bite, or to use their scent glands. This is apparently another of the large, stout garter snakes, the largest individual masuring 34 inches although the majority were considerably smaller. The two largest were kept alive for a time and proved to be quite indifferent feeders. A few toads (*Bufo punctatus*) were consumed.

All measurements given are based on preserved specimens.

TUCSON, ARIZONA

Lampropeltis triangulum gentilis in Montana

By DEE JAY NELSON

Four examples of *Lampropeltis triangulum gentilis* (Baird and Girard) taken well north of the listed range limit have come to the writer's attention. Three of these have been in my possession and the fourth was reported on excellent authority. Three other fragmentary reports have been received over the past two years, but these were poorly substantiated.

In an earlier report (Nelson, Herpetologica, 1948: 170) information on two Montana examples has been given. Both snakes escaped, but photographs later revealed that the larger had 31 whitish cross bands and the other 35. No scale counts were made.

The third Montana example captured near Three Forks was given to me July 17, 1949 by Mr. Lyons of the "See 'Em Alive Zoo," Red Lodge, Montana (as was also the nine-inch specimen described in an earlier paper). Three Forks is 125 miles northwest of the limit of my first tentative range revision and 425 miles northwest of the accepted northern range limit.

The latest specimen is now in my collection and is feeding well upon mice (*Mus musculus*) and small lizards (*Sceloporus occidentalis biseriatus*) which it takes alive or dead with great eagerness. Its total length is 475 mm; head length to apex of quadrate 19 mm; maximum head width 10 mm; greatest body diameter 20 mm; tail length 65 mm; ventrals 200; caudals 44; supralabials 7; infralabials 9, with the first on each side in contact with anterior chinshields; temporals 2-2; scale rows 21-21-19; whitish crossbands 31; weight 28.8 grams, six days after feeding; sex, female.

One other milk snake captured in Montana by Mr. Kenneth Jacobson was taken one mile northeast of Billings on Alkali Creek and within a mile of the spot where I encountered the first specimen out of range. Mr. Jacobson is a qualified herpetologist and there can be no doubt of the specimen's identity.

On July 2, 1949, a specimen was found DOR on Wyoming state highway 26, about twenty-five miles north of Laramie and approximately on the border line of the accepted range. It is noted here for purposes of comparison. The example had been flattened laterally and was somewhat dehydrated from long exposure to the sun, but some information could be taken from it: Length, about 710 mm; whitish cross bands 36; scale count at mid-body 21; supralabials 7. Infralabials, ventrals and caudals were badly mutilated but assumedly normal. As is typical with the species, the lighter cross bands were somewhat broadened on the first and second scale rows.

This snake is probably more common than it would appear, but because of its nocturnal and secretive habits it is rarely seen. Practically no DOR examples have been observed beyond the previously accepted range so it can not be too abundant. These reports on Montana specimens are few but as other examples are found the natural range boundaries will become more clearly outlined.

719 HIGHLAND PARK DRIVE, BILLINGS, MONTANA

Mating Activities Between Two Subspecies of *Elaphe obsoleta*

By RICHARD M. JOHNSON

A 62-inch male *Elaphe obsoleta confinis* (Baird & Girard) collected near Gramercy, Louisiana, March 26, 1948, and a 52-inch female *Elaphe obsoleta obsoleta (Say)* collected near Delaware Ohio, April 9, 1948, were kept as cage mates from April 9 to May 21 before evincing any interest in each other.

On the night of May 21 both snakes were removed from the cage for approximately half an hour. Shortly after being returned to the cage the male became very alert and began to court the female. The male flickered his tongue rapidly and began to move about the cage excitedly. When he came in contact with the female he rubbed his chin forward along her back and attempted to bring his body into contact with her's for its entire length (the cage was too small to permit them to stretch out full length). Where his ventral scutes were in contact with the female's body, those scutes were moved rapidly forward and backward. The female, meanwhile, merely attempted to elude the attentions of the male. Only occasionally would she execute the jerking movements often seen when *Elaphe* crawl across each other. If the female succeeded in escaping from the male, the latter would frantically search for her. Occasionally the male would run his chin off the female's body and rub his own body for a moment. If the male rubbed the back of the female in a posterior direction, he would soon reverse his direction and rub towards her head. When he reached her neck region, he would press his chin firmly against her, resuming the rubbing as his "hold" was broken. No effort was made to entwine the tails unless the male's chin was pressed against the female's neck and the greater portion of their bodies were in contact.

When the tails were juxtaposed, the tail of the male was rapidly undulated laterally, and he would attempt to force his tail beneath that of the female. If he succeeded in getting his tail beneath hers, either forward or backward of her cloacal opening, he would maneuver until their cloacal openings were together. As his tail was forced beneath the female's, it was rotated so that the plane of the ventral surface of the cloacal region was at an angle to the surface of the floor. During these maneuvers the female would switch her tail away or draw it beneath their bodies. Courtship appeared to be a one-sided affair; the female either attempted to elude the male or remained passive. Courtship began at 9:30 p.m. and was continuous until 10.35 p.m. when coitus was effected.

The male's tail, rotated from the horizontal, was beneath that of the female and was elevated at an angle from the long axis of his body. The anal plate was drawn forward, exposing the orifice of the right hemipenis. The female's tail was arched but with the ventral surface horizontal. When the cloacal openings came in contact, the hemipenis was inserted. The hemipenis was never seen to be everted except to enter the female's cloaca. It could not be ascertained whether or not the female aided in effecting the entrance of the hemipenis, but her anal plate was not seen in a position to expose the cloacal opening. How-

ever, she remained quiet as coitus was effected, whereas she had been moving about most of the time during courtship.

For a few minutes after inserting the hemipenis, the basal region of the male's tail was thrust forward at regular intervals as if to insert the hemipenis deeply. After a number of such movements, the ventral surface of the male's tail returned to the horizontal. The tails of both snakes remained elevated and were waved slowly. Only a short portion of the proximal end of the stalk of the hemipenis was visible. The male maintained his "chin hold" on the female's neck and his ventral scutes continued to move forward and backward (only more slowly) where they were in contact with the female.

At 10:55 p.m. the female suddenly began to writhe her tail. The male's tail also thrashed and in a few seconds they were separated. It could not be determined which, or if both, initiated the violent separation, but it occurred at the termination of this and subsequent copulations. Upon withdrawal of the hemipenis a small portion of the spiny area was still everted, but both lobes were inverted. A thick yellowish fluid adhered to the visible spiny portion. This fluid dropped off as the spiny area was completely inverted. Microscopic examination revealed sperm in this fluid.

After separation the female's cloacal region appeared swollen for about an inch anteriorly from the cloacal opening. Convulsive muscular contraction was noted in this swollen area. The swelling subsided in a few minutes. The female was quite active, while the male lay coiled in a corner of the cage.

Courtship and copulation were observed on subsequent occasions:

May 22—Courtship, 8:30 p.m. to 10:30 p.m.
—Copulation, 10:30 p.m. to 10:55 p.m.

May 23—Courtship, 8:15 p.m. to 8:50 p.m.
—Copulation, 8:50 p.m. to 9:07 p.m.

May 25—Couplation, 2:15 a.m. to ?

May 27—Copulation, 10:39 a.m. to 11:05 a.m.

May 28—Couplation, a.m.

Courtship and copulation on the above dates were similar to those described previously. Consecutive copulations did not always involve the same hemipenis. In all instances observed, the male was the aggressor, while the female either attempted to avoid the male's attentions or remained passive.

On another occasion, when courtship was in progress, I opened the door of the cage. The female escaped through the open door and crawled beneath a dresser. For a few moments the male searched about the cage and then came out the door. He followed the path taken by the female along the baseboard, becoming sidetracked only once when he started up the door frame. He resumed his course almost immediately, went under the dresser and affected copulation (May 27).

The male apparently lost interest in the female as abruptly as the initial interest occurred. The last display occurred on May 28, although the snakes continued to be cagemates after that date. During the week

of activities, however, the male did not display continuous interest in the female. Sexual interest on the part of the male seemed to be spontaneous. It would begin suddenly and end with the cessation of coitus. The male was never observed to engage in courtship and not in copulation. Both snakes accepted live food prior to and following mating activities.

On July 5, 1948, the female deposited eight eggs. The shells were white, faintly striated longitudinally and some of them had a narrow constriction encircling the shell at right angles to the long axis of the egg. This constriction appeared as if a thread had been drawn tightly around the egg and then removed. All of the eggs were turgid. Measurements, plus or minus 1 mm., were: 45x24, 47x24, 48x22, 50x22, 50x24, 51x22, and 57x22. An accident prevented the hatching of these eggs.

ZOOLOGY DEPARTMENT, TULANE UNIVERSITY,
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RATTLESNAKES TANGLED IN WIRE—A pen of one inch poultry wire was used in connection with studies on quail malaria at the La Joya, New Mexico, State Game Refuge. Grain fed to the quail constituted an unfailing source of food which attracted antelope ground squirrels and small kangaroo rats. The rodents easily slipped through the wire mesh. Their presence and that of the quail attracted snakes to the pen, where three rattlesnakes were shot during the spring and summer of 1949. One large coachwhip snake was seen in and around the pen on several occasions but always eluded capture. On one occasion, when frightened, it raced full speed through the wire mesh. The loss of four young quail was attributed to this marauder.

During the summer, two average sized diamondback rattlesnakes (*Crotalus atrox* Baird and Girard) fatally trapped themselves in the wire mesh. One of them had entered the pen, eaten a small kangaroo rat and as a result could not escape. The other snake was caught by the middle of its body as it attempted to enter the pen. In both instances the rough scales effectively prevented backing out whereas smooth-scaled species similarly caught might have extricated themselves. They seemed to have no perception of the size of opening safe to enter.

These are the only instances of snakes self-caught in net-wire fences of which the writer has known. Stories brought back from India tell of natives trapping pythons by tethering a small pig in a large box-trap with only one entrance—a hole just large enough for a *hungry* python to crawl through. The idea suggests itself that a trap useful under special circumstances could be constructed of chicken wire for catching smaller snakes in a similar way.—HOWARD CAMPBELL, 512 N. Vermont St., Albuquerque, New Mexico.

Unusual Snake Records from Utah and Nevada

By ANGUS M. WOODBURY and EARL W. SMART

Several unusual records of snakes have recently accumulated that seem to warrant publication at this time. Some of these have been obtained by experimental fencing of a snake den near Grantsville, Tooele County, Utah. Results of this fencing have been so encouraging that we believe it can be applied in systematic field studies. This den was enclosed by a circular fence of screen wire cloth 30 inches high. The enclosure was about 150 feet in diameter and contained 3 traps set in the fence to catch snakes returning to the den. Report on this study will be published separately.

The den is located in a mass of cobblestone rocks that lie just below the old shoreline of ancient Lake Bonneville and probably represent the outlet of former springs that washed out the soil between the rocks and left underground channels into which the snakes can descend for hibernation. The den is surrounded by a sea of sagebrush. If they descend the slope for more than a mile, they would encounter shadscale and if they ascended the slope a similar distance, they would find the juniper and pinyon pigmy forests.

Seven species of snakes were found inhabiting the den. These included the following snakes, listed in decreasing numerical order: the Great Basin rattlesnake, *Crotalus viridis lutosus;* western striped racer, *Masticophis taeniatus taeniatus*; Mormon blue racer, *Coluber constrictor mormon*; Great Basin gopher snake, *Pituophis catenifer deserticola*; spotted night snake, *Hypsiglena ochrorhyncha deserticola*; thimble snake, *Diadophis regalis regalis*; and long-nosed snake, *Rhinocheilus lecontei lecontei.* The last three represent unusual records that are reported herein.

Thimble Snake, *Diadophis regalis regalis.* A specimen of this brightly colored snake without a ring on its neck was taken in the traps near Grantsville on October 8, 1949. A previous specimen was taken at the same place April 21, 1942. Other records taken in Utah include the following: A specimen was taken at a snake den in Pole Canyon near Cedar Fort, Utah County, altitude about 5,500 feet, among sagebrush and juniper trees, May 4, 1940. A specimen was taken in the Deep Creek Mountains, Juab County, altitude about 4,700 feet, among rocks on a hill slope about 25 yards above a marshy area near Birch Creek, May 5, 1937. A specimen, now in the Zoological Museum of the University of Michigan, was taken near Freedom, Sanpete County, September, 1936. Another specimen was taken in Pine Valley, Washington County (Hardy, 1939:83) from beneath rocks in an oak brush and ponderosa pine area, May 13, 1939. Another specimen was taken in Zion Canyon, Washington County (Woodbury, 1931:69), altitude about 4,300 feet, among stream-side vegetation, August, 1931. Another specimen was taken in Springdale, Washington County from cultivated fields near a stream, 1928. These records indicate that this snake is a widespread inhabitant of the low canyons, foothills and even the sagebrush and juniper slopes below the foothills in the Great Basin of western Utah and in the Virgin River Valley of southwestern Utah, but we have no records from the Colorado Basin.

Arizona King Snake, *Lampropeltis pyromelana.* Two specimens of this

snake were reported by Linsdale (1940:246) taken from Water Canyon about 8 miles north of Lund, White Pine County, Nevada at 8:30 A.M., June 12, 1932. It was apparently a mating pair in rock crevices on a steep southwest facing slope about 200 feet above the stream in the canyon. A third specimen for Nevada was taken in Sawmill Canyon, about one mile east of Lund in a similar rocky area on a sidehill among junipers, pinyon pines and sagebrush in August, 1949. It was brought to the University of Utah by Max McBeth.

Long Nosed Snake, *Rhinocheilus lecontei.* A hatchling of this varicolored snake was taken in the traps near Grantsville, September 20, 1949. This snake appears to be rather rare in Utah. Other specimens taken in Utah are the following: a specimen was taken from St. George, Washington County (Van Denburgh, 1922). Another specimen was collected at St. George, Washington County (Tanner, 1927:54). A specimen was taken from Veyo, Washington County (Hardy, 1939:83), which was taken early in the morning May 19, 1939 coiled upon the top of a potato pit. Another specimen was taken near St. George, Washington County, May 1, 1940, altitude about 3,000 feet. These records suggest that its range extends through the Great Basin of Utah and is therefore an extension of range beyond that indicated in the 1943 check list (Stejneger and Barbour, 1943:152).

Desert Spotted Night Snake, *Hypsiglena ochrorhyncha deserticola.* Two adult specimens were taken in the traps at the snake den near Grantsville, September 25 and 28, 1949, where they must have been living among the sagebrush. The habits of this species were discussed by Hardy (1938:100) and distribution in Utah was analyzed by Wilmer Tanner (1944:59). Hardy reported specimens of *H. o. loreali*s from shadscale, pinyon-juniper and along the bank of Price River in Carbon County. Specimens of *H. o. deserticola* from Zion Canyon reported by Woodbury (1931:97) were found among brush and rocks alongside the Virgin River. In Salt Lake County, specimens have been taken from areas bearing oak brush and sagebrush and from loose rocks in gravel pits within the same general type of vegetation.

The 1943 Check list (Stejneger and Barbour, 1943:175) does not include Utah in its range. The species appears to be a common inhabitant of foothills and valleys bearing oak brush, juniper and pinyon, sagebrush, shadscale and streamside vegetation in the Great Basin, the Virgin River Valley and the Colorado Basin.

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UNIVERSITY OF UTAH, SALT LAKE CITY, UTAH

Notes on the Habits of *Microhyla carolinensis olivacea* (Hallowell)

By WILMER W. TANNER

It has been known for some time that the western narrow-mouthed frog feeds largely if not entirely on ants (Smith, 1934). This food preference was forcefully brought to my attention on the afternoon of May 18, 1947, while collecting on a rocky slope approximately one mile east and five miles north of Lawrence, Douglas County, Kansas (this locality is now included in the University of Kansas Natural History Reservation). During the afternoon, five narrow-mouthed frogs were collected, three from under rocks and two under a partly-decayed plank. One, a small female, was found beneath a flattened rock which was covering the main entrance to a colony of small ants. It appeared as though the frog had worked itself into the loose soil, for it was surrounded by soil except for its back which was in contact with the underside of the rock. The head was free and only a few inches away from one of the openings leading to the subterranean ant galleries. The moving of the rock did not disturb the frog. However, within seconds the ants had scurried out of the galleries and were hurrying over and about the frog. During the few minutes of observation, the ants made no attempt to bite the frog and there were no indications that the frog was at all disturbed by the activities of the ants. In fact, it was not possible to detect any differences in the activities of the ants, when walking across the frog or across the moist soil. The disturbance presumably prevented any feeding activities, but there is every reason to believe that the frog was a real predator on the ant colony.

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The next morning numerous round objects were observed in the bottle containing the frog taken from the ant nest. On examination the objects were found to be ant heads, and it was possible to identify over fifty, many of which were still in possession of complete mouth parts and antennae. In a second bottle containing the four other frogs taken the same day from the same locality there were also numerous ant heads.

Specimens taken from the same locality on May 10 and June 13, 1947, and in May and June of 1948, all showed a large number of ant heads in their excrement. During May and June of 1949 a large number of these frogs were examined from Douglas, Riley, Pottawatamie, and Geary Counties, Kansas, and in each case only ants could be detected in the digestive tract and in the excrement.

Wood (1948) infers that the eastern narrow-mouthed frog mates prior to May 24. This is not the case with the western form, although it is active in rocky habitats the latter part of April and until heavy rains occur, usually in June. During three years of observation in eastern Kansas the first storms to bring large numbers of males into the breeding ponds occurred June 20, 1947; June 18, 1948, and May 1, 1949.

The observed breeding habitats and activities were essentially as reported by Bragg (1943). However, much remains to be done before a complete picture of the feeding and breeding habits of the narrow-mouthed frog is available.

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NUMBER OF YOUNG OF *LIODYTES ALLENI*. — Schmidt and Davis, "Field book of the snakes of the United States and Canada," 3 ed., report six as the number of young of this secretive snake. A gravid female measuring 25¾ inches was caught crawling about the bank of a drainage ditch during the evening following a late rain near Okeechobee City, Florida by R. Marlin Perkins on the 20th of March, 1948. The specimen died shortly after arrival at the Lincoln Park Zoo. Dissection revealed 34 three-fourths-inch embryos in the oviducts. The female and embryos are now in the Chicago Academy of Sciences.—BERT TSCHAMBERS, Lincoln Park Zoo, Chicago, Ill.

Notes on Some Salamanders from Tennessee

By RALPH MASON SINCLAIR

For the past two years the author has made a limited study of Tennessee salamanders. The majority of the collecting has been done in middle Tennessee; however, occasional trips have been made to other parts of the state. Three major physiographic regions make up Tennessee. Their subdivisions, in order from west to east, are the Mississippi River Alluvial Plain, the East Gulf Coastal Plain, the Western Valley of the Tennessee River, the Western Highland Rim Plateau, the Central Basin, the Eastern Highland Rim Plateau, the Cumberland Plateau, the Tennessee Appalachian Valley Province, and the Southern Section of the Blue Ridge Mountains. Because of the diversity of habitats many species and subspecies of salamanders are to be found in Tennessee. Those forms which I have collected are listed below with notes on their distribution and ecology. The majority of the salamanders which were collected during this study are in the author's personal collection located at Nashville, Tennessee.

1. *Necturus maculosus maculosus* (Rafinesque). Davidson, Hardin, and Benton Counties. A female with a total length of 274 mm. was dissected on March 26 and found to contain approximately 77 eggs, the majority of which were 5 mm. in diameter.

2. *Triturus viridescens viridescens* (Rafinesque). x *louisianensis* (Wolterstorff). Davidson, Dickson, Wilson, and Macon Counties. Not enough specimens from the last-mentioned two counties have been collected to give an accurate picture of the degree of intergradation. However, large series of *viridescens* collected in Davidson and Dickson Counties show a definite intergradation with *louisianensis*. Most specimens have the dorsal red spots, but they are generally incompletely ringed with black.

3. *Ambystoma maculatum* (Shaw). Grundy County. A specimen from the above county was found under a rotten log in thin mixed woods near an upland swamp.

4. *Ambystoma opacum* (Gravenhorst). Grundy, Franklin, and Wilson Counties. This salamander has been found under logs in upland swamps composed of mixed woods.

5. *Ambystoma texanum* (Matthes). Davidson County. Only one specimen has been collected, and it was found in a plant hotbed under the ground.

6. *Ambystoma tigrinum tigrinum* (Green). Davidson and Williamson Counties. A series of sixteen from the former county averaged 266 mm. in total length with extremes of 318 mm. and 194 mm. Eggs of this salamander have been found as early as November 27 at Nashville (Davidson County). Also recently-laid eggs have been found on December 14.

7. *Desmognathus fuscus fuscus* (Rafinesque). Davidson, Robertson, Cheatham, Overton, Bradley, and Henderson Counties. A male from Davidson County had a total length of 133 mm. An interesting variation of this salamander occurs at Nashville (Davidson County). It differs from typical *fuscus* as the adult has an orange oval patch which extends from the posterior angle of the eye to the angle of the jaw, and orange-red spots which are paired on the dorsum and separated

by a median broken line. The larvae of this variation have the orange-red dorsal spots, and unlike other *fuscus* larvae, have distinct red gills.

8. *Plethodon dorsalis* (Cope). Davidson, Robertson, and Wilson Counties. This subspecies is abundant along rock cliffs, spring flows, and small creeks. In Wilson County this salamander has been found on the walls and ceiling of a cave. One Davidson County specimen had the extreme total length of 102 mm., which is somewhat larger than 87 mm. reported by Bishop (1943) to be the largest recorded.

9. *Plethodon glutinosus glutinosus* (Green). Davidson, Robertson, Benton, Franklin, Bradley, Henderson, and Shelby Counties. Found under logs and rocks in damp woods both deciduous and mixed. In Henderson County a specimen was collected which had the white flecks confined to the sides of the head, trunk, and tail. No markings were found on the dorsum as seen in typical middle Tennessee examples. This seems to be the typical coastal plain type of *glutinosus*.

10. *Gyrinophilus porphyriticus porphyriticus* (Green). Bradley County. A specimen collected from the above county was found under a large, flat stone, near a spring.

11. *Pseudotriton ruber ruber* (Sonnini). Davidson and Robertson Counties. An individual from the latter county was found under a plank near a small creek.

12. *Pseudotriton ruber vioscai* Bishop. Henderson County. One specimen was collected on October 29, 1949, 2 6/10 miles southeast of Life, Tennessee (Henderson County). It measured 123 mm. in total length with a tail length of 46 mm. This specimen was found under a log in damp woods next to a swamp. This is the second record of this form from the state. The locality for this individual is about 28 miles northeast of the locality (Hardeman County, 10 miles northeast of Bolivar) of a *vioscai collected* by Ross and reported by Mittleman (1946).

13. *Eurycea bislineata rivicola* Mittleman. Davidson, Cheatham, Robertson, and Overton Counties. This salamander has been found in both terrestrial situations and in small creeks. The small larvae have a broad dorsal light band which encloses two rows of paired light spots. A second row of light spots extends on the sides just above the level of the legs, and often a third row of light spots is present below the second row. The chin, throat, and venter are immaculate.

14. *Eurycea bislineata cirrigera* (Green). Haywood County. A number of specimens from the above county were collected under logs in a river bottom swamp. The males had prominent cirri.

15. *Eurycea longicauda longicauda* (Green). Bradley County, and a larval record for Davidson and Williamson Counties. An individual from Bradley County was found under a large, flat stone near a spring, with an adult *Desmognathus f. fuscus*. In Williamson County a larvae of this form was found in a small creek along with the larvae of *Eurycea bislineata rivicola* and a larva of *Eurycea lucifuga*. A larva from Davidson County appears to belong to this form.

16. *Eurycea longicauda guttolineata* (Holbrook). Henderson and Haywood Counties. This salamander has been found in springs, and also under logs and boards in swamps.

17. *Eurycea lucifuga* (Rafinesque). Davidson, Marion, Marshall, Williamson, and Wilson Counties. The Cave Salamander is found in caves (twilight zone and beyond), at the mouth of caves under wet leaf mats,

and under logs and stones near caves, springs, and creeks. In caves this salamander is found abroad during the day as well as at night. However, in terrestrial situations it seeks shelter during the day and wanders out at night. Larvae are found in creeks, springs, spring seepages on hillsides, and small pools formed by dripping water at the mouth of caves. During the time that I found larvae abundant in open situations I examined caves for the express purpose of finding the larvae, but in no case was I successful even when the larvae were found a few yards outside the mouth of the cave. At Nashville (Davidson County) hundreds of larvae have been counted crawling over the bottom of a shallow spring in the open. These were observed at all hours of the day, and they were continually moving about in the open. They were also observed to be active at night. However, as the larvae reach transformation they become more sensitive to light, and seek shelter during the day. The fact that larvae have been found in the open ranging from 14 mm. to 45 mm. differs greatly from the account given by Banta and McAtee (1906). They report larvae 17.5 mm. long which were found in Mayfield's Cave near Bloomington, Indiana, in early February and as late as March 20. The smallest larvae which I have found was collected on February 4, 1949, at Nashville (Davidson County), and was 14 mm. in length. Several collections of larvae from Davidson County showing relative sizes (total length in millimeters) are as follows (the number of larvae collected follows date):

December 21, 1948 (4) 19 to 23 (av. 22);
January 6, 1949 (10) 17 to 20 (av. 18.6);
February 4, 1949 (17) 14 to 38.5 mm. (av. 20.2);
March 12, 1949 (3) 22.5, 51.5, 31.5;
August 27, 1949 (2) 45, 44; and
December 27, 1949 (15) 17 to 20 (av. 18.8).

Banta and McAtee state that the larvae develop in the deeper fastnesses of the cave. I have watched the larvae from 14 mm. to transformation, and in this part of Tennessee they do not develop in the interior of caves as they are reported to do in Indiana. The majority of the eggs hatch in December and January, and the following summer the larvae transform June through August. Two recently transformed larvae with respective total lengths of 59 mm. and 60.5 mm. were collected in Davidson County on June 2, 1949.

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2904 WESTMORELAND DRIVE, NASHVILLE, TENNESSEE

Status of the Generic Name *Lioheterodon* Applied to Madagascan Serpents*

By GEORGE S. MYERS

In 1893, Boulenger (*Cat. Snakes Brit. Mus.*, 1: 268) segregated as a distinct genus the Madagascan snakes previously referred to the American genus *Heterodon*. For the two Madagascan species he used the generic name *Lioheterodon*, which he cites as having been proposed by Duméril and Bibron in 1844 (error for 1854) in the *Atlas* of the *Erpétologie Générale*.

Upon looking over Duméril and Bibron's work, it becomes evident that the name "Leiohétérodon" (not *Lioheterodon*) appears five times in five different places, to wit: (1) vol. 7, part 1, p. 776, in reference to the atlas; (2) vol. 7, part 1, p. 777, in the discussion; (3) vol. 7, part 2, p. 1533, in the index; (4) atlas, p. 15, in explanation of the plate; and (5) pl. 60, in the legend. All of these references are of the year 1854. In every one of these places except the last, the name is shown plainly to be a synonymous manuscript name not accepted by the authors; this, however, has no effect on the availability of the name under the International Rules. What does affect the availability of the name under the Rules is the fact that, in every one of the five places the name appears, it is used solely as a French vernacular name, with the French accent marks in place. This type of usage is common in Duméril and Bibron (and many other French works), as can plainly be seen by their usage of other names in the same way, and by their great care not to use the French form and accents whenever they are using or quoting a scientific name formally, even one that they do not accept. One need only look at the explanations of the plates and the plates themselves to see that every species name listed there is in the vernacular, even though in some instances the vernacular and the formal scientific name may be spelled the same. Since names printed only as vernacular names are not acceptable under the Rules, the only possible conclusion is that Duméril and Bibron formally proposed no such name and that Boulenger alone is responsible for the generic name he used. It must be cited as *Lioheterodon* Boulenger, 1893, and since I find no type designation, I designate *Heterodon madagascariensis* Duméril, Bibron and Duméril as the genotype.

Lioheterodon Boulenger, 1893, is subsequent to and a synonym of *Anomalodon* Jan., 1863, whose monotype is the same as the above-designated type of *Lioheterodon*. However, *Anomalodon* of Jan is preoccupied by *Anomalodon* S. Bowdich (1825; in: T. E. Bowdich, *Excursion Madeira and Gambia*, p. 237), a fish. Therefore, *Lioheterodon* Boulenger, 1893, will stand as the generic name of the Madagascan snakes.

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*This article appeared in Vol. V., :146 with several lines omitted and is therefore republished in whole.—Ed.

A RECORD FOR THE NORTHERN PRAIRIE SKINK, *EUMECES SEPTENTRIONALIS SEPTENTRIONALIS* (BAIRD) IN MISSOURI. The occurrence of *E. s. septentrionalis* in northwestern Missouri is to be expected in view of its distribution in Iowa and Kansas. In fact, Smith's distributional map for the species anticipates the finding of *septentrionalis* in the northwest corner of Missouri (Smith, H. M., Handbook of Lizards, 557 pp., Constock Publ. Co.). However, there have been no museum specimens to substantiate the indicated range in Missouri. The glacial loessial hills of northwest Missouri present some ideal habitats (open grass-covered hillsides with small flat rocks) and a search has been made for these lizards on various field trips over a period of the last 15 years.

On April 20, 1949, I collected a *septentrionalis* 1 mile southeast of Bean Lake, Platte Co., Missouri. It was not in a habitat considered ideal but on a timbered bluff with large rock outcrops overlooking the Missouri River bottom land. The lizard is deposited in my personal collection (PA6233).—PAUL ANDERSON, 604 W. College, Independence, Mo.

THE GREATER FIVE-LINED SKINK, *EUMECES LATICEPS* (SCHNEIDER), IN KANSAS.—That this large lizard has eluded collectors despite rather extensive collecting in eastern Kansas is perhaps due to its arboreal habits and to rarity as it reaches the range periphery. The first specimen for Kansas of which I am aware was collected by J. E. Joy at Murray's Lake, 3 miles southeast of Fontana, Miami Co., Kansas, on May 10, 1949. On May 16, 1949, I collected a second *laticeps* 4 miles west of La Cygne, Linn Co., Kansas. While these localities represent two county records, they are separated by a distance of only 4 miles. The localities are approximately 100 miles north of the nearest reported locality in Oklahoma and about the same distance from the nearest reported localities in Missouri.

The Miami County specimen (PA5967 in my personal collection) is a male measuring 132 mm. snout to vent; tail length 110. The tail appears to have been regenerated. The Linn Co. specimen (PA6028) measures 79 mm. snout to vent; tail 90 mm. Both have a single small postlabial, and the intercalory scales on the fourth toe extend to the third phalanx. In the smaller lizard the stripes remain distinct and there are but 5, the typical number for these lizards in the western part of its range.

Eumeces fasciatus is common in the area as is *Leiolopisma laterale*. A single *Eumeces anthracinus pluvialis* was collected (Miami Co.). *Eumeces o. obsoletus* occurs in nearby pastureland.—PAUL ANDERSON, 604 West College, Independence, Mo.

NOTES ON THE ORNATE BOX TURTLE—In the habitat description of *Terrapene ornata* (Agassiz), Pope (1939, Turtles of the United States and Canada, p. 141) states that "It is decidedly partial to sandy, dry, or even semi-arid regions." He further states that "No aquatic tendencies have been noted; in this respect the Ornate and Common Box Turtles differ greatly."

I wish to place the following notes on record as they are contrary to Pope's latter statement and point to the fact that some ornate box turtles do seek a more moist environment even when the weather is neither extremely hot nor dry. These notes also show that *ornata* has no aversion to crossing fair sized bodies of water.

All observations were made near Melvern, Osage Co., Kansas, during July, 1948. This was the wettest July on record for Kansas and one of the coolest.

July 3, 1948—11:00 A.M.—Wolf Creek, 2 mi. N. and ½ mi. E. of Melvern.

Two adult female ornate box turtles were found together in a small pool of water six by eight feet formed by the lowering of the creek level. The stream bed and sides were entirely rocky and there were numerous pools of various size, but no other turtles were seen. The water in this pool was eight inches deep in the center. The turtles were immersed in three inches of water near the edge with their heads protruding. They were within six inches of each other. At my approach both drew their heads and legs within their shells and were thus entirely submerged except for the very top of the carapace. No check was made on the time in which they would remain in this position.

July 4, 1948—10:00 A.M.

An adult male box turtle was observed swimming across the Marais des Cygnes River ¾ mi. W. of Melvern. At this point the river is about sixty feet in width. He was not seen until in mid-river and was heading for the southern shore. Most of the carapace was above the surface while swimming and the head was either submerged or held very low in the water. Every three or four feet he would pause and the head would emerge with the neck fully extended at an angle of forty-five degrees. The head was lowered almost immediately into the water and swimming continued. He did not seem alarmed at the approach of the boat and kept a straight course to the bank. On reaching the shore, which was muddy and steep, a great deal of difficulty was displayed in attempting to ascend. At this point he was captured and an examination showed that the entire foot was missing from the left foreleg due to an old injury. This did not seem to impair either his walking or swimming.

July 14, 1948—10:00 A.M.

An adult male box turtle was discovered beneath an overhanging rock in one inch of water at the edge of a small rocky stream 2 mi. S.W. of Melvern. On returning past this spot two hours later he had not changed position.

July 21, 1948—11:00 A.M.—Long Creek, ¾ mi. E. of Melvern.

A medium sized box turtle was seen emerging from the water and disappeared beneath some thick, low-growing bushes. The creek here has formed a large, deep pool where it is backed up by several small islands. It was from this pool that the turtle emerged. It was not seen swimming.—ROBERT F. CLARKE, 714 Union St., Emporia, Kansas.

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THECADACTYLUS RAPICAUDUS IN HONDURAS — Among a small lot of lizards collected at La Ceiba, Honduras, by Edward C. Becker during the summer of 1949 is an adult male *Thecadactylus rapicaudus* Houttuyn. This species has not previously been recorded from Honduras, to my knowledge, although its existence there has been indicated by records from adjacent areas both to the north (Yucatan peninsula) and south (Nicaragus to northwestern South American). This specimen, measuring 91 mm. from snout to vent, was taken on a fence at night. Comparison with others of the same species from Yucatan and Panama reveals no significant differences.

Other species represented in the collection donated to the Illinois Natural History Survey by Mr. Becker are: *Iguana iguana rhinolopha, Anolis tropidonotus, Cnemidophorus l. lemniscatus, Ameiva undulata pulchra,* and *Mabuya mabouya mabouya.*—PHILIP W. SMITH, Illinois Natural History Survey, Urbana, Ill.

THE TYPE LOCALITY OF *ELAPHE L. LAETA* (B. & G.)— Stejneger and Barbour (Check List N.A. Amph. and Rep., 1943) give the type locality of *Scotophis laetus* Baird and Girard as "Red River, Arkansas." Baird and Girard indicate that the type specimen was taken by the Marcy Expedition which explored the upper reaches of the Red River (1854 Expl. Red R. La. U.S. House Ex. Doc. (unnumbered) 33rd Cong., 1st Sess. Reptiles of the Route). Marcy left Ft. Smith, Arkansas and proceeded to Ft. Belknap, Texas to secure troops and supplies. He crossed the Red River near the mouth of the Washita River close to the present day Woodville, Oklahoma, but probably did not collect while enroute. The actual expedition did not enter Oklahoma until it had reached the mouth of the Big Wichita River (near the Cotton-Jefferson county line). The type locality, then, can be restricted at least to southwestern Oklahoma, or the eastern Texas panhandle, provided, of course, that Marcy made no collections while enroute to Ft. Belknap. Dr. Doris M. Cochran of the U.S. National Museum has provided me with a list of snakes from Oklahoma that are in the U.S.N.M. None of these seem to be identifiable with the Ft. Smith to Ft. Belknap trip. — HAROLD A. DUNDEE, University of Oklahoma Museum, Norman.

A RANGE EXTENSION FOR THE RINGED SALAMANDER, *AMBYSTOMA ANNULATUM* Cope.—*Ambystoma annulatum* has been reported only from the vicinity of Hot Springs, Arkansas and localities in Stone Co., Missouri. The specimen herein reported extends the range approximately 150 miles to the northwest and places the form in the north-flowing water shed, although still within the Ozark region. Virgil Owens presented me with the specimen (now PA5610) collected by Roy McNabb of the Missouri Conservation Commission, 3 miles southwest of Owensville, Gasconade Co., Missouri. This is a Lebanon silt loam area timbered by scrub oak. The salamander was discovered nearly 18 inches underground on December 5, 1947.

It is a male; total length, 200 mm.; tail length, 110 mm. There are 15 costal grooves counting one each in axilla and groin.—PAUL ANDERSON, 604 W. College, Independence, Mo.

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